

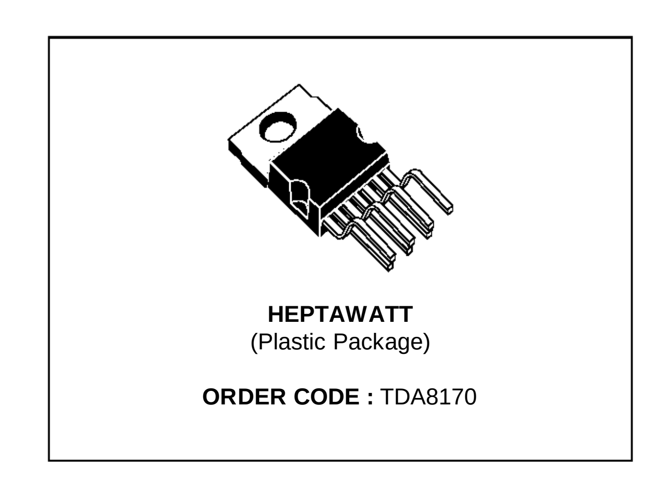


TV VERTICAL DEFLECTION OUTPUT CIRCUIT

The functions incorporated are :
- POWER AMPLIFIER
- FLYBACK GENERATOR
- REFERENCE VOLTAGE
- THERMAL PROTECTION

DESCRIPTION

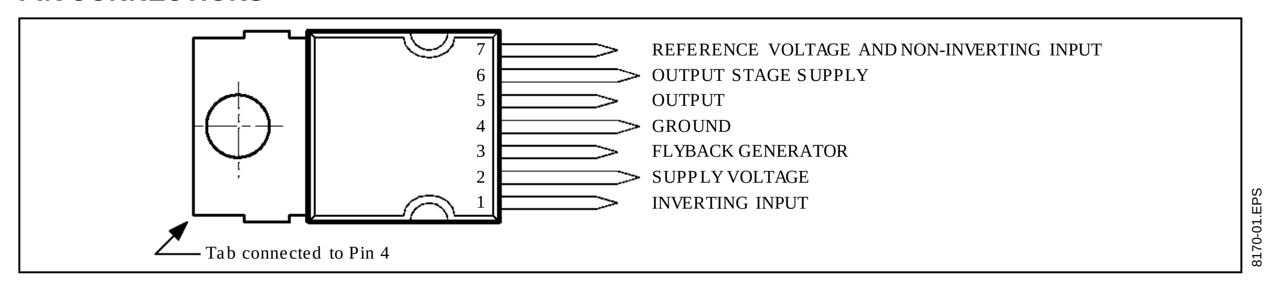
The TDA8170 is a monolithic integrated circuit in HEPTAWATT[TM] package. It is a high efficiency power booster for direct driving of vertical windings of TV yokes. It is intended for use in Colour and B & W television receivers as well as in monitors and displays.



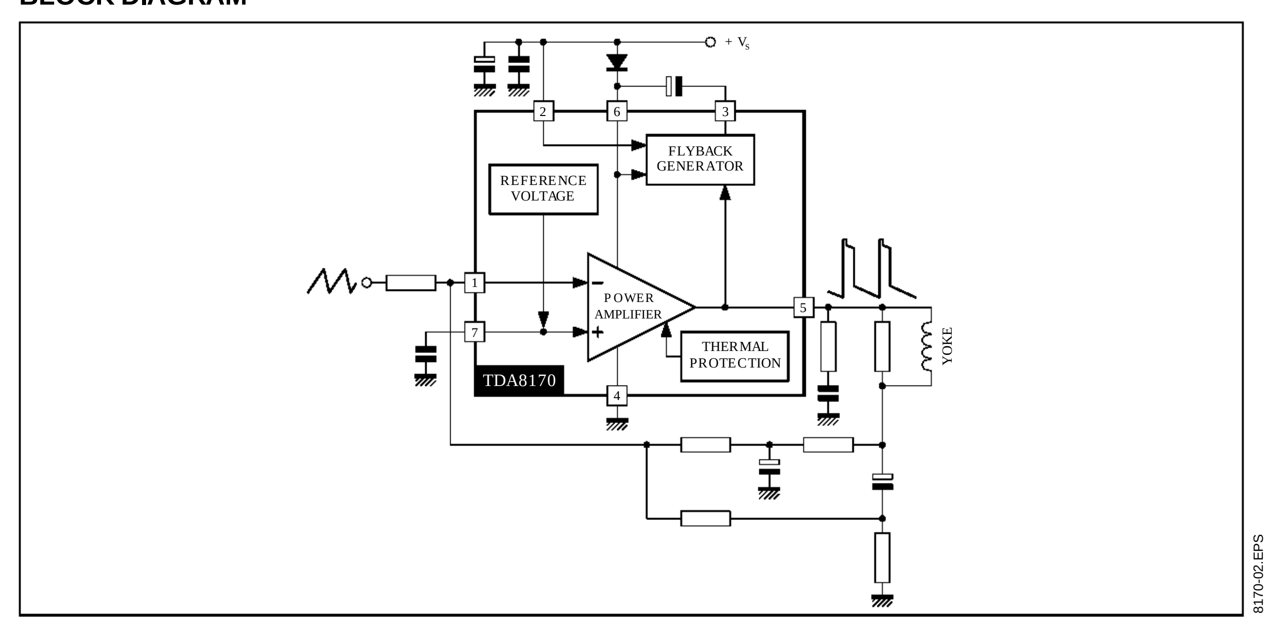
HEPTAWATT
(Plastic Package)

ORDER CODE : TDA8170

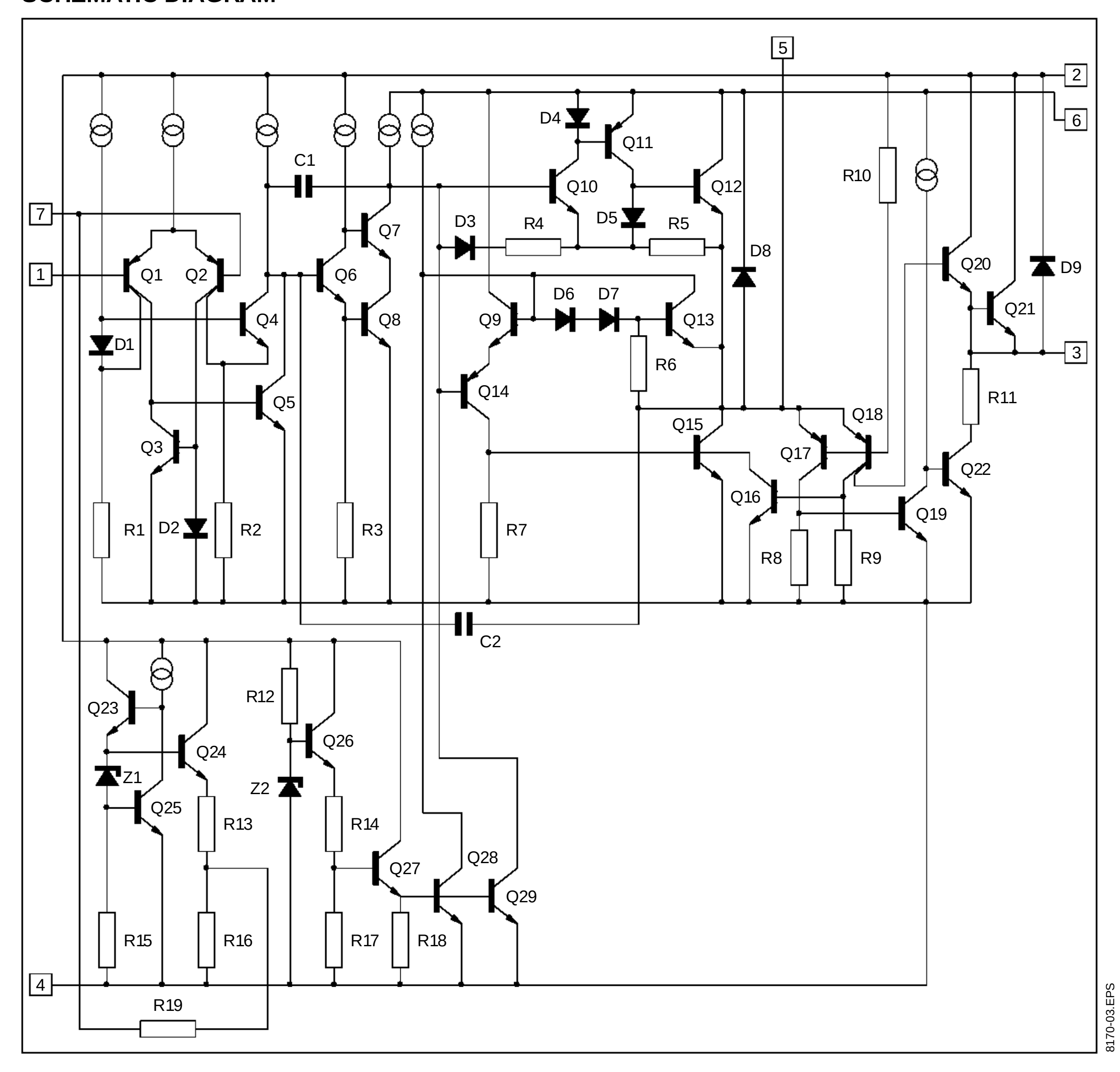
PIN CONNECTIONS



BLOCK DIAGRAM



SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	Supply Voltage (pin 2)	35	V
V_5, V_6	Flyback Peak Voltage	60	V
V_3	Voltage at Pin 3	+ V_s	
V_1, V_7	Amplifier Input Voltage	+ V_s – 0.5	V
I_o	Output Peak Current (non repetitive, t = 2 msec)	2.5	A
I_o	Output Peak Current at f = 50 or 60 Hz, t ≤ 10 µsec	3	A
I_o	Output Peak Current at f = 50 or 60 Hz, t > 10 µsec	2	A
I_3	Pin 3 DC Current at $V_5 < V_2$	100	mA
I_3	Pin 3 Peak to Peak Flyback Current at f= 50 or 60 Hz, t_{fly} ≤1.5msec	3	A
P_{tot}	Total Power Dissipation at T_{case} = 90 °C	20	W
T_{stg}, T_j	Storage and Junction Temperature	– 40 to 150	°C

8170-01.TBL

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j\text{–}case}$	Thermal Resistance Junction-case Max.	3	°C/W

8170-02.TBL

ELECTRICAL CHARACTERISTICS

(refer to the test circuits, V_S = 35V, T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
I_2	Pin 2 Quiescent Current	I_3 = 0, I_5 = 0		8	16	mA	1a
I_6	Pin 6 Quiescent Current	I_3 = 0, I_5 = 0		16	36	mA	1a
I_1	Amplifier Input Bias Current	V_1 = 1 V		– 0.1	– 1	µA	1a
V_7	Reference Voltage			2.2		V	1a
$\frac{\Delta V_7}{\Delta V_S}$	Reference Voltage Drift versus Supply Voltage	V_s = 15 to 30 V		1	2	mV/V	1a
V_{3L}	Pin 3 Saturation Voltage to GND	I_3 = 20 mA		1		V	1c
V_5	Quiescent Output Voltage	V_s = 35 V , R_a = 39 kΩ		18		V	1d
		V_s = 15 V , R_a = 13 kΩ		7.5		V	1d
V_{5L}	Output Saturation Voltage to GND	I_5 = 1.2 A		1	1.4	V	1c
		I_5 = 0.7 A		0.7	1	V	1c
V_{5H}	Output Saturation Voltage to Supply	– I_5 = 1.2 A		1.6	2.2	V	1b
		– I_5 = 0.7 A		1.3	1.8	V	1b
T_j	Junction Temperature for Thermal Shut Down			140		°C	

8170-03.TBL

Figure 1a : Measurement of I_1, I_2, I_6, V_7, $\Delta V_7/\Delta V_S$

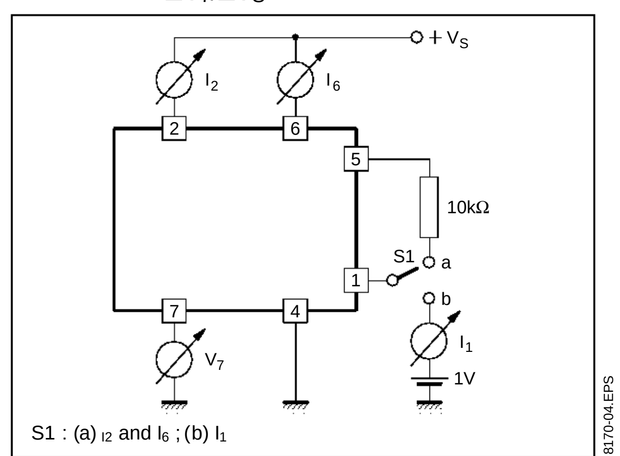


Figure 1b : Measurement of V_{5H}

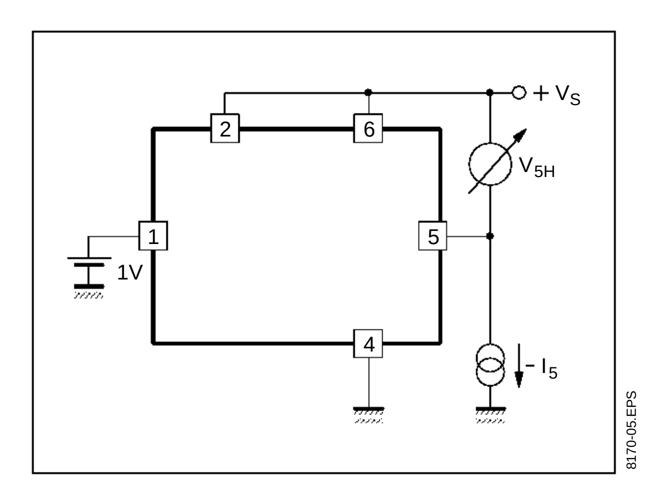


Figure 1c : Measurement of V_{3L}, V_{5L}

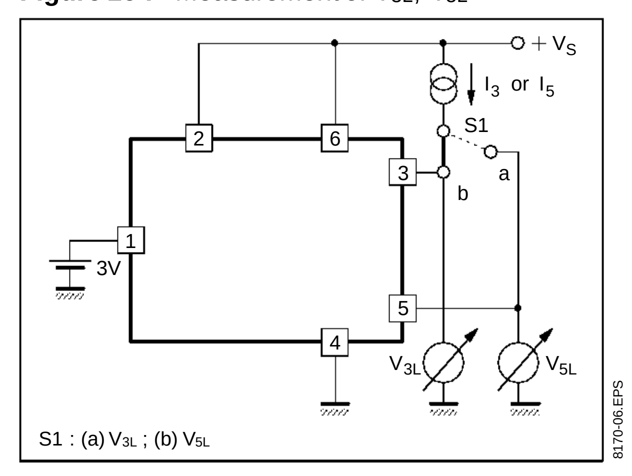


Figure 1d : Measurement of V_5

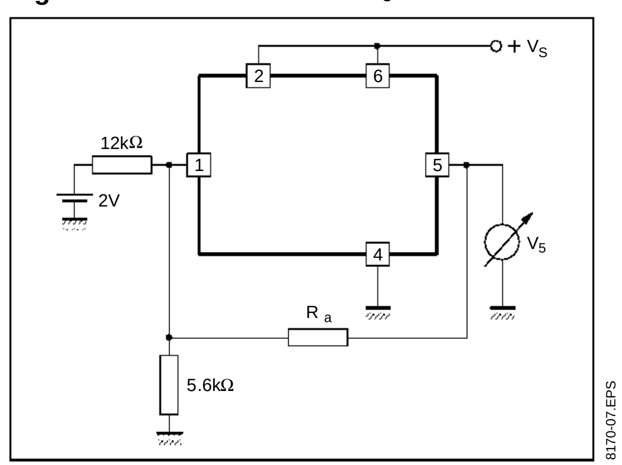


Figure 2 : AC Test Circuit

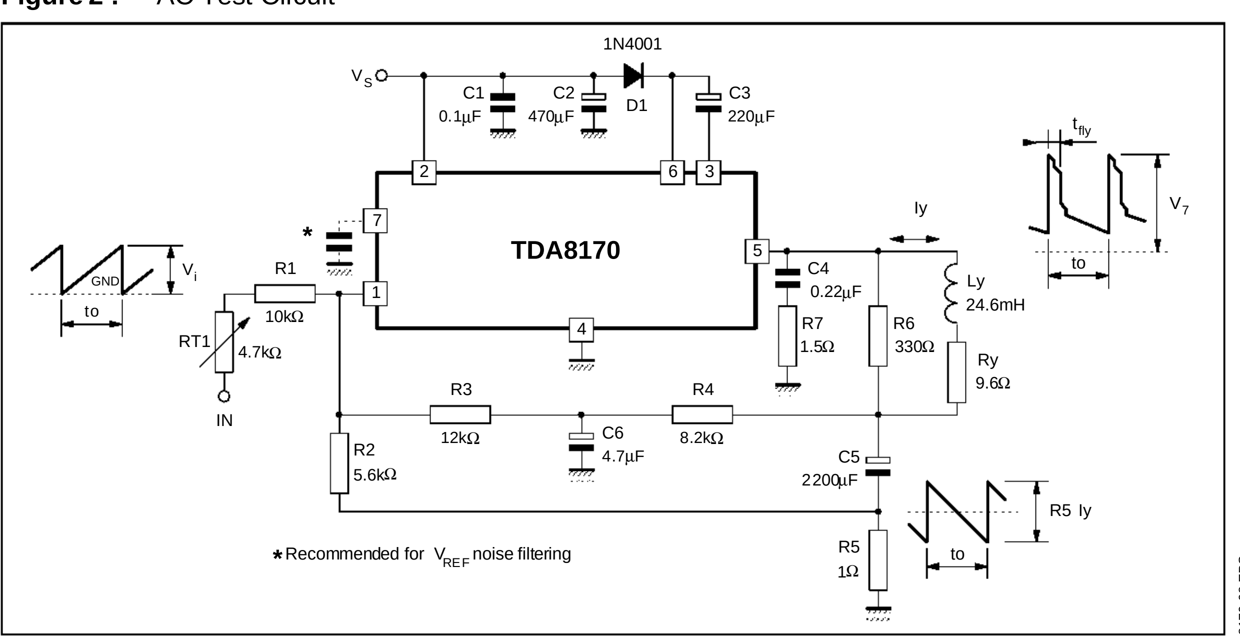


Figure 3 : PC Board and Component layout of the Circuit of fig. 2(1 : 1 scale)

8170-09.EPS

COMPONENTS LIST FOR TYPICAL APPLICATIONS

Component	110 ° TVC 5.9 Ω/10 mH 1.95 App	110 ° TVC 9.6 Ω/24.6 mH 1.2 App	90 ° TVC 15 Ω/30 mH 0.82 App	Unit
RT1	10	4.7	10	kΩ
R1	12	10	12	kΩ
R2	10	5.6	5.6	kΩ
R3	27	12	18	kΩ
R4	12	8.2	5.6	kΩ
R5	0.82	1	1	Ω
R6	270	330	330	Ω
R7	1.5	1.5	1.5	Ω
D1	1N 4001	1N 4001	1N 4001	–
C1	0.1	0.1	0.1	μF
C2 el.	1000/25 V	470/25 V	470/25 V	μF
C3 el.	220/25 V	220/25 V	220/25 V	μF
C4	0.22	0.22	0.22	μF
C5 el.	200/25 V	2200/25 V	1000/16 V	μF
C6 el.	4.7/16 V	4.7/16 V	10/16 V	μF

8170-04.TBL

TYPICAL PERFORMANCES

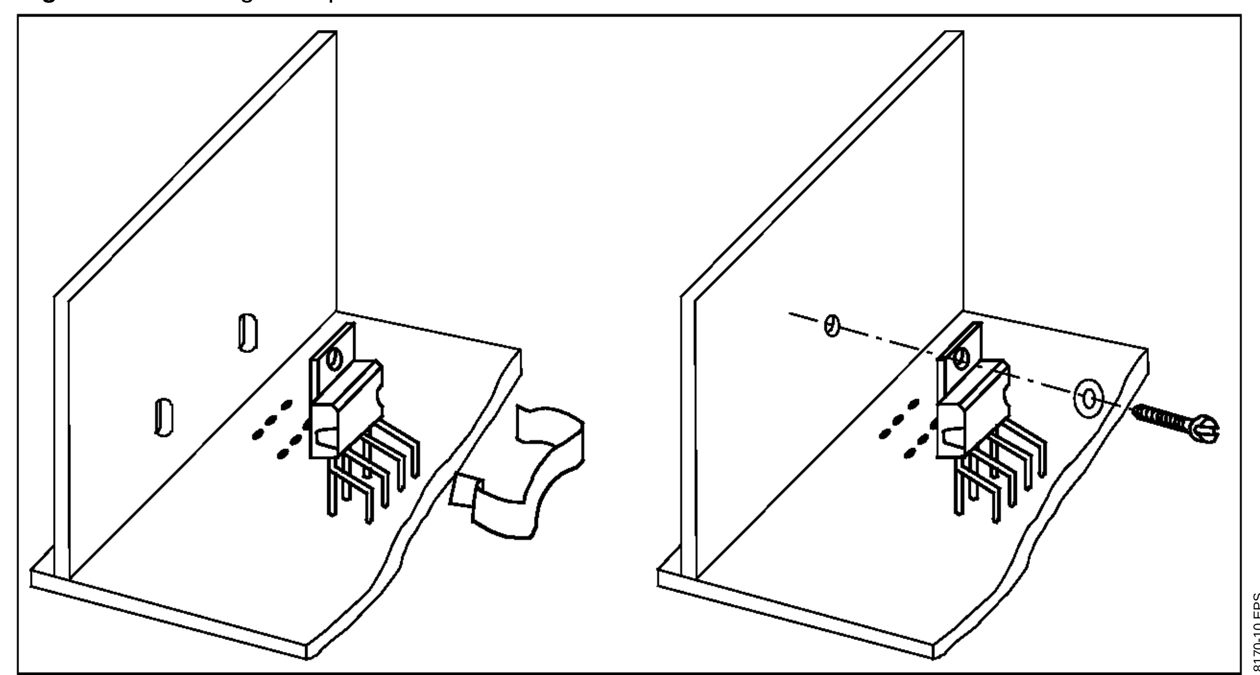
Parameter	110 ° TVC 5.9 Ω/10 mH	110 ° TVC 9.6 Ω/27 mH	90 ° TVC 15 Ω/30 mH	Unit
V_s - Supply Voltage	24	22.5	25	V
I_s - Current	280	175	125	mA
t_{fly} - Flyback Time	0.6	1	0.7	ms
P_{tot} - Power Dissip.	4.2	2.5	2.05	W
$R_{th\ o-a}$ - Heatsink	7	13	16	°C/W
T_{amb}	60	60	60	°C
$T_{j\ max}$	110	110	110	°C
T_o	20	20	20	ms
V_I	2.5	2.5	2.5	V_{pp}
V_7	2.5	2.5	2.5	V_p

8170-05.TBL

MOUNTING INSTRUCTIONS

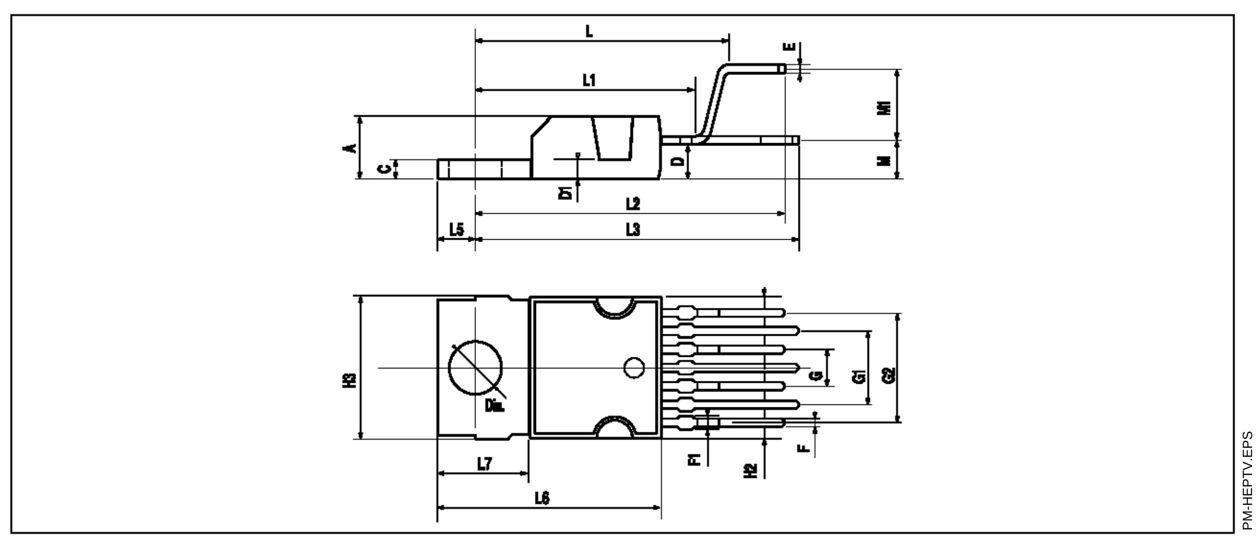
The power dissipated in the circuit must be removed by adding an external heatsink.
Thanks to the HEPTAWATT^{TM} package attaching the heatsink is very simple, a screw a compression spring (clip) being sufficient. Between the heatsink and the package it is better to insert a layer of silicon grease, to optimize the thermal contact ; no electrical isolation is needed between the two surfaces.

Figure 4 : Mounting Examples



8170-10.EPS

PACKAGE MECHANICAL DATA : 7 PINS - PLASTIC HEPTAWATT



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.6		08	0.024		0.031
F1			0.9			0.035
G	2.41	2.54	2.67	0.095	0.100	0.105
G1	4.91	5.08	5.21	0.193	0.200	0.205
G2	7.49	7.62	7.8	0.295	0.300	0.307
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L		16.97			0.668	
L1		14.92			0.587	
L2		21.54			0.848	
L3		22.62			0.891	
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
M		2.8			0.110	
M1		5.08			0.200	
Dia.	3.65		3.85	0.144		0.152

HEPTV.TBL

